Optimal Routing Design (paperback) (Networking Technology)

Russ White, Alvaro Retana, Don Slice

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Techniques for optimizing large-scale IP routing operation and managing network growth

- Understand the goals of scalable network design, including tradeoffs between network scaling, convergence speed, and resiliency
- Learn basic techniques applicable to any network design, including hierarchy, addressing, summarization, and information hiding
- Examine the deployment and operation of EIGRP, OSPF, and IS-IS protocols on large-scale networks
- Understand when and how to use a BGP core in a large-scale network and how to use BGP to connect to external networks
- Apply high availability and fast convergence to achieve 99.999 percent, or "five 9s" network uptime
- Secure routing systems with the latest routing protocol security best practices
- Understand the various techniques used for carrying routing information through a VPN

Optimal Routing Design provides the tools and techniques, learned through years of experience with network design and deployment, to build a large-scale or scalable IP-routed network. The book takes an easy-to-read approach that is accessible to novice network designers while presenting invaluable, hard-to-find insight that appeals to more advanced-level professionals as well.

Written by experts in the design and deployment of routing protocols, *Optimal Routing Design* leverages the authors' extensive experience with thousands of customer cases and network designs. Boiling down years of experience into best practices for building scalable networks, this book presents valuable information on the most common problems network operators face when seeking to turn best effort IP networks into networks that can support Public Switched Telephone Network (PSTN)-type availability and reliability.

Beginning with an overview of design fundamentals, the authors discuss the tradeoffs between various competing points of network design, the concepts of hierarchical network design, redistribution, and addressing and summarization. This first part provides specific techniques, usable in all routing protocols, to work around real-world problems. The next part of the book details specific information on deploying each interior gateway protocol (IGP)—including EIGRP, OSPF, and IS-IS—in real-world network environments. Part III covers advanced topics in network design, including border gateway protocol (BGP), high-availability, routing protocol security, and virtual private networks (VPN). Appendixes cover the fundamentals of each routing protocol discussed in the book; include a checklist of questions and design goals that provides network engineers with a useful tool when evaluating a network design; and compare routing protocols strengths and weaknesses to help you decide when to choose one protocol over another or when to switch between protocols.

"The complexity associated with overlaying voice and video onto an IP network involves thinking through latency, jitter, availability, and recovery issues. This text offers keen insights into the fundamentals of network architecture for these converged environments."
—John Cavanaugh, Distinguished Services Engineer, Cisco Systems®

This book is part of the Networking Technology Series from Cisco Press, which offers networking

professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.

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